9. *Revenue*

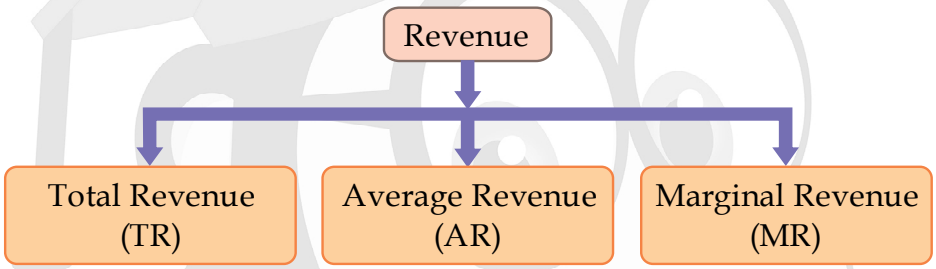
The term revenue refers to the income obtained by a firm through the sale of goods at different prices.

> ***In the words of Dooley***, *'the revenue of a firm is its sales, receipts or income'. The revenue concepts are concerned with Total Revenue, Average Revenue and Marginal Revenue.*
> ***According to Clower and Due***, *"it is a product planned sales and expected selling price".*
> ***According to Stonier and Hague***, *"Total revenue at any output is equal to price per unit multiplied by quantity sold".*

The concept of revenue consists of three important terms; Total Revenue, Average Revenue and Marginal Revenue. So revenue means the total sales proceeds or total receipts of firms from the sales of output.

Revenue = Price of the Commodity × Quantity of the Commodity During a given period of time, the seller sells certain quantity of the commodity.

Types of Revenue



Total Revenue

> ***According to Dooley*** *"Total revenue is the sum of all sales, receipts or income of a firm."*
> ***According to Clower and Due*** *Total revenue may be defined as the "product of planned sales (output) and expected selling price."*

Focus Formula

$$TR = AR \times Q$$

where TR = *Total Revenue*
AR = *Average Revenue or Price per Unit*
Q = *Output*

For example if the price of a commodity is Rs. 100 and total units sold are 20 in that case total revenue will be

$$TR = 100 \times 20 = 200$$

$$TR = 2000$$

Initially, as output increases total revenue (TR) also increases, but at a decreasing rate. It eventually reaches a maximum and then decreases with further output. Less competition in a given market is likely to lead to higher prices and the possibility of higher super-normal profits.

Average Revenue

Average revenue refers to revenue per unit of output sold. It is obtained by dividing the total revenue by the number of units sold.

Focus Formula

$$AR = \frac{TR}{Q}$$

where AR = *Average Revenue*
TR = *Total Revenue*
Q = *Output*

> ***According to McDonnell**, "Average Revenue is the per unit revenue received from the sale of one unit of a commodity."*

$$TR = \text{Price} \times \text{Output}$$

$$TR = Pq$$

$$AR = \frac{Pq}{q} = P$$

and P = f(Q) is an average curve which shows that price is a function of quantity demanded. It is also a demand curve.

Average Revenue and Price of the commodity are one and the same.

Marginal Revenue (MR)

According to Ferguson, "Marginal revenue is the change in total revenue which results from the sale of one more or one less unit of output."

According to A. Koutsoyiannis, "The marginal revenue is the change in total revenue resulting from selling an additional unit of the commodity."

Marginal Revenue (MR) is defined as increase in total revenue due to one unit increase in the sale of the quantity of output.

Algebraically it is the total revenue earned by selling N units of the commodity instead of N–1 i.e., $MR_n = TR_n - TR_n{-}1$.

Focus Formula

$$MR = \frac{\Delta TR}{\Delta Q}$$

$$MR_n = TR_n - TR_{n-1}$$

Whereas
TR_n = *Total Revenue of 'n' units*
TR_{n-1} = *Total Revenue from (n – 1) units*
$MR_{(nth)}$ = *Marginal revenue from nth unit*
n = *Any given number*

Refer to the above example. Let the vendor increased the sale to 21 kg. In that case the total revenue or TR becomes 50 × 21 = Rs.1050. Earlier when the sale of output was 20 kg, TR = Rs. 1000. Hence MR = 1050 – 1000 = Rs. 50.

MR can alternatively be expressed as :

$$MR = P[1 - (1/E_P)]$$

where MR = marginal revenue,

P = market price of the product, and

E_P = the price elasticity of demand for the product

The above formula is very useful when the demand function has a known constant price elasticity. Business managers must estimate the value of MR in order to arrive at decisions about price and output.

Total Revenue, Average Curve and Marginal Curve

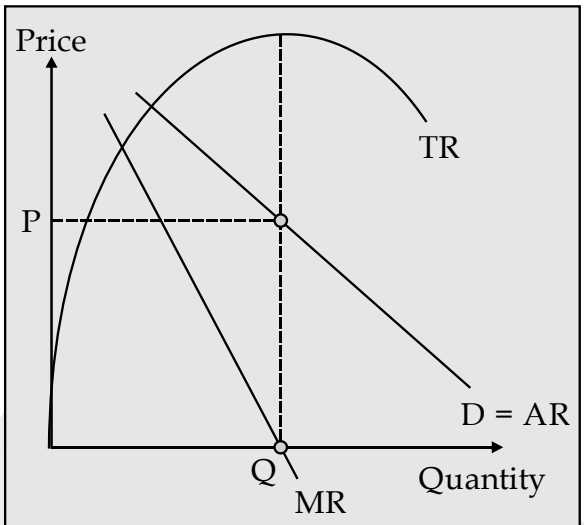


Fig. : *Total Revenue, Average Curve and Marginal Curve*

Relations between Total Revenue and Marginal Revenue

(i) If MR is increasing, TR increases at increasing rate.
(ii) If MR is diminishing, TR increases at diminishing rate.
(iii) If MR is zero, TR is constant and maximum.
(iv) TR decreases, when MR becomes negative.

Marginal Revenue and Total Revenue

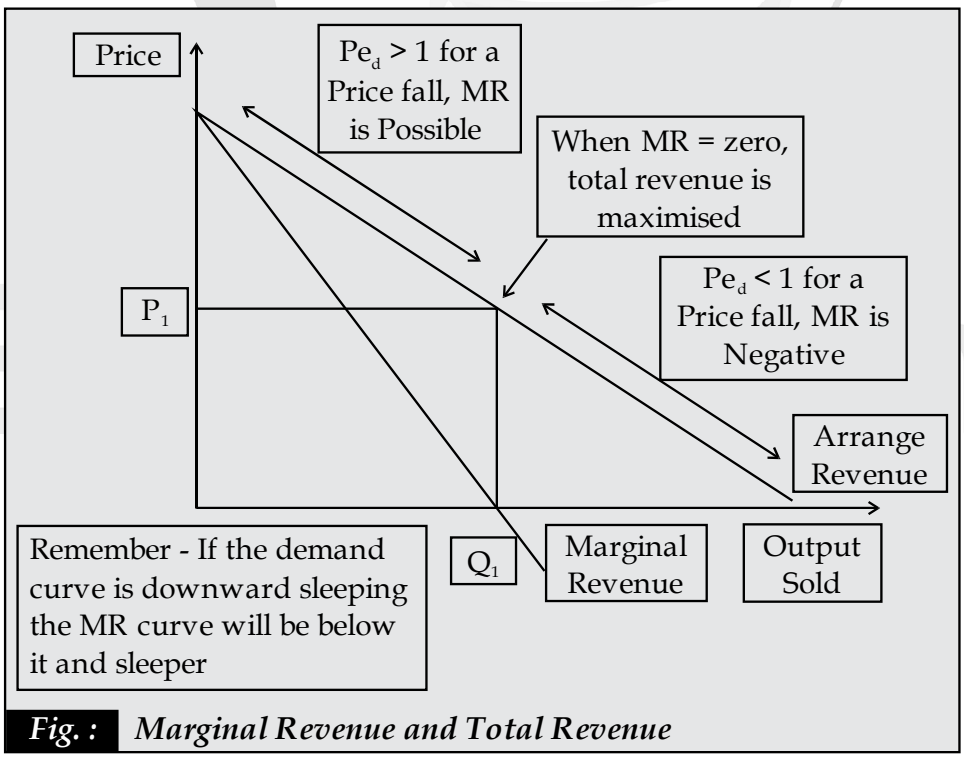


Fig. : *Marginal Revenue and Total Revenue*

Relationship between Marginal Revenue (MR) and Average Revenue (AR)

(i) When AR is constant, MR = AR.

(ii) When AR is diminishing, AR > MR.

(iii) When AR is rising, AR < MR.

(iv) MR can be negative, but not AR.

Firm's Revenue in Different Markets

- Perfectly Competitive market
- Monopoly Market
- Monopolistic Competitive Market
- Oligopoly

Perfectly Competitive Market

Perfect competition is the term applied to a situation in which the individual buyer or seller (firm) represent such a small share of the total business transacted in the market that he exerts no perceptible influence on the price of the commodity in which he deals.

Thus, in perfect competition an individual firm is price taker, because the price is determined by the collective forces of market demand and supply which are not influenced by the individual. When price is the same for all units of a commodity, naturally AR (Price) will be equal to MR i.e., AR = MR.

The average revenue curve is a horizontal straight line parallel to X axis and the marginal revenue curve agrees with it. This is since under ideal competition the number of firms selling an identical product is very huge. The price is determined the market forces of supply and demand so that only one price tends to prevail for the whole industry.

Q	AR(P)	TR	MR
1	10	10	10
2	10	20	10
3	10	30	10
4	10	40	10
5	10	50	10
6	10	60	10
7	10	70	10

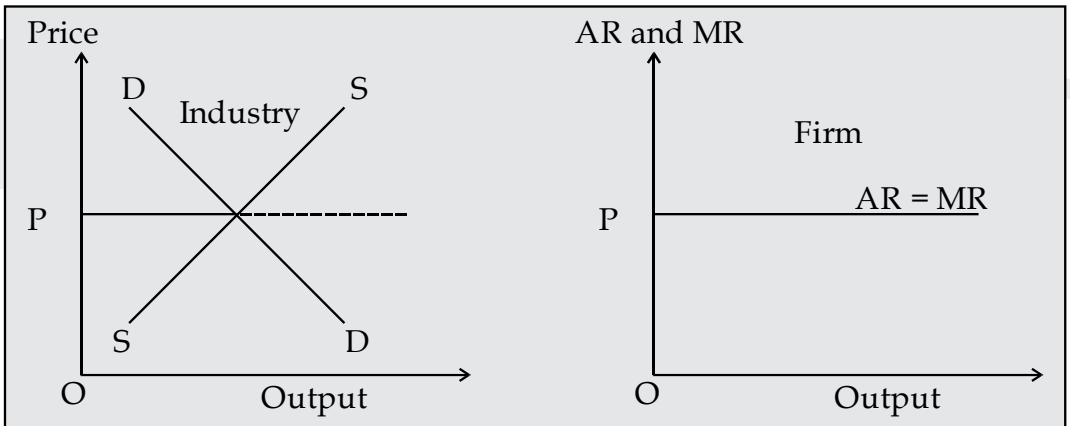


Fig. : ***Perfectly Competitive Market***

Monopoly (Imperfect Competition)

Monopoly is opposite to perfect competition. Under monopoly both AR and MR curves slope downward. It indicates that to sell more units of a commodity, the monopolist will have to lower the price.

The average revenue curve is the downward inclining industry demand curve and its related marginal revenue curve lies below it. The marginal revenue is lower than the average revenue. Given the demand for his product the monopolist can increase his sales by lowering the price, marginal revenue also falls but the rate of fall in marginal revenue is greater than that in average revenue.

Q	AR(P)	TR	MR
1	10	10	10
2	9	18	8
3	8	24	6
4	7	28	4
5	6	30	2
6	5	30	0

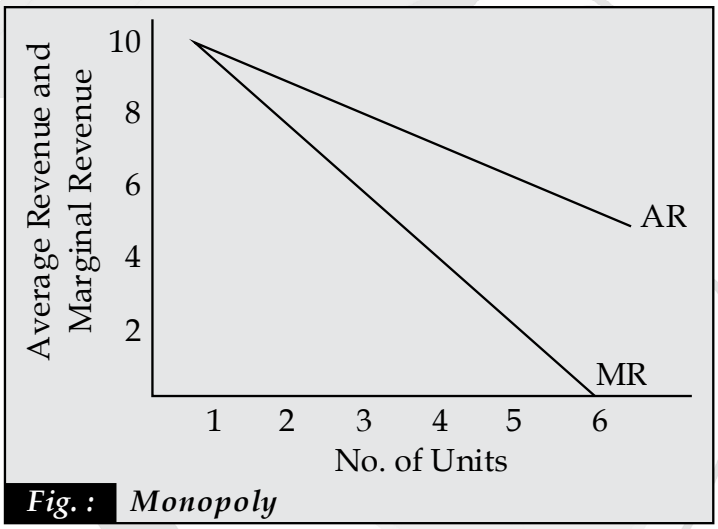


Fig. : ***Monopoly***

The AR curve as well as the MR curve slope downwards. However, the rate of all in marginal revenue is double that of the fall of the average revenue.

Monopolistic Competition

When a firm is working under conditions of monopolistic or imperfect competition, its demand curve or AR curve is less than perfectly elastic, the exact degree of elasticity being different in different market situations depending upon the number of sellers and the nature of product.

DID YOU KNOW ?

The demand/AR curve has a negative slope and the MR curve lies below it. This is because the monopolist seller ordinarily has to accept a lower price for his product.

Under imperfect competition conditions, total revenue increases at a diminishing rate. It becomes maximum and then begins to decline.

The relationship between AR and MR is the same as under monopoly, but there is an exclusion that the AR curve is more elastic. This is because products are close substitutes under monopolistic competition. The firm can hikes sales by a reduction in its price.

Price	Unit Sold	TR	AR	MR
6	1	6	6	6
5	2	10	5	4
4	3	12	4	2
3	4	12	3	0
2	5	10	2	– 2

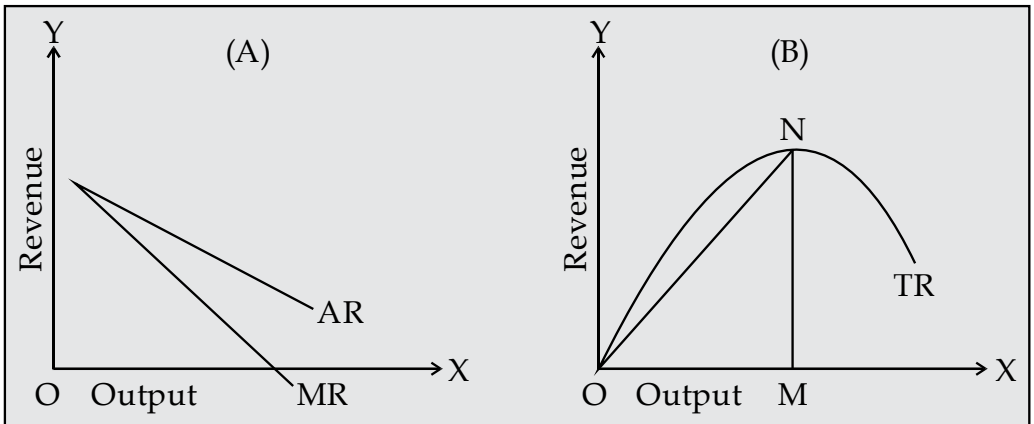


Fig. : ***Monopolistic Competition***

$$ON = \frac{NM}{OM} = \frac{TR}{output}$$

Oligopoly

Under oligopoly market situation the number of sellers is small. The price reduction or extension by one firm affects the other firms. If a seller raises the price of his product, others will not follow him. They know that by following the same price, they can earn more profits. That producer, who has raised the price, is likely to suffer losses because demand of his product will fall.

The average and marginal revenue cures do not have a smooth downward slope under oligopoly. They acquire kinks. As the number of sellers under oligopoly is small, the effect a price cut or price hikes on the party of one seller will be followed by some changes in the behavior of the other firms. If a seller raises the price of his product, the other seller will experience a fall in demand for his product.

Average revenue curve is represented in the diagram becomes elastic after K and its consequent MR curve rises discontinuously from a to b and then persists its course at the new higher level.

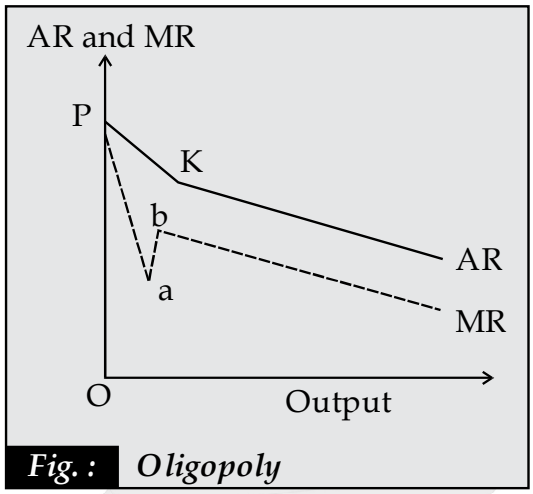


Fig. : ***Oligopoly***

Alternatively, if the oligopolistic seller reduces the price of his product, competitors also follows him in reducing the prices of their products so that he is not able to enhance his sales. AR curve becomes less elastic from K onwards and it is represented in the diagram. The consequent MR curve falls vertically from a to b and then slopes at a lower level.

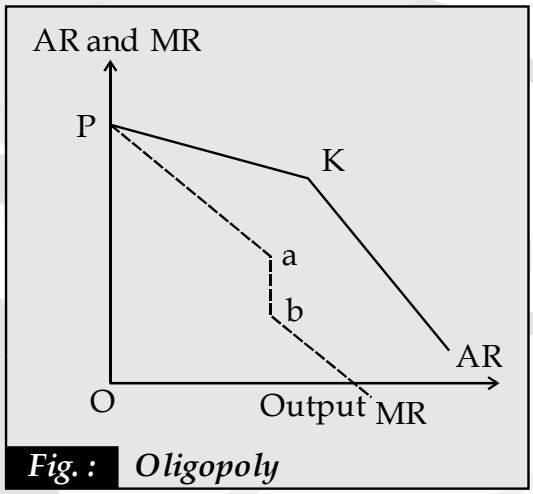


Fig. : ***Oligopoly***